Technical Support for Procurement and Project Management and Private Sector Participation to the Ministry of Water and Irrigation, Water Authority of Jordan and the Jordan Valley Authority

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Terms of Reference

Aqaba Water and Wastewater Utility Asset Valuation

Contract No. PCE-I-00-98-00015-00
Task Order 814

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Terms of Reference
Aqaba Water and Wastewater Utility Asset Valuation

The United States Agency for International Development (USAID) is soliciting technical and financial proposals for evaluation of the existing water and wastewater assets of two Jordanian government entities operating in Aqaba, Jordan, the Water Authority of Jordan and the Aqaba Special Economic Zone Authority.

Under the Ministry of Water and Irrigation (MWI), the Water Authority of Jordan (WAJ) currently operates all of the water and wastewater facilities within Aqaba, and owns most of the fixed assets under a utility known as WAJ-Aqaba.

The Aqaba Special Economic Zone Authority (ASEZA) was established by the Jordanian Parliament in 2000 to oversee the development and regulation of the Aqaba Special Economic Zone (ASEZ). As part of its activities in the zone, ASEZA has also installed water and wastewater assets.

The water and wastewater utility and the assets of both parties (MWI and ASEZA) will be joined together into a new utility, nominally known as Aqaba Water Company (AWC). This new company is projected to commence on February 1, 2004. The combined assets of the new company must be registered and valued as part of the establishment of the new company.

Background

The total population of the Aqaba Governorate is 83,000. The population of ASEZ is 67,000. The WAJ-Aqaba utility provides centralized water and wastewater services to approximately 70,000 customers within the City of Aqaba, and to several villages outside of Aqaba.

ASEZA has extended water and wastewater piping to certain developments within the ASEZ, though the precise nature and extent of these improvements is unknown and will be determined in this project.

The following is a description of the current WAJ facilities that are installed and operating, and the near-term improvements that are under construction and expected to be completed within 1—2 years.

Existing Water Supply and Distribution. WAJ-Aqaba serves approximately 70,000 people with potable water. The Disi and Yutum Well fields, located northeast of the Aqaba area, provide water to residential, commercial, tourism, government, and industrial users in Aqaba and to several small villages.

Water is pumped from the wells via 92 kilometers of primary transmission piping to a series of pressure break tanks, and then to the City.

The system contains:

- A central collection reservoir,
- Two break pressure tanks,
- 11 drinking water storage reservoirs, and
- Three irrigation water reservoirs.

The primary transmission lines range in size from 300 mm to 800 mm in diameter. No further booster pumping is required within the City, as the break pressure tank elevations are sufficient to provide adequate water pressure throughout the distribution system.

The Aqaba distribution system consists of approximately 500 kilometers of water line, ranging from 25 mm to 600 mm in diameter. Pipe materials include ductile iron, concrete, PVC, polyethylene, steel, and galvanized steel. Pipe age ranges from less than 5 years to over 30 years.

WAJ-Aqaba has approximately 180 steel and ductile iron water valves, ranging in size from 50 mm to 600 mm in diameter.

Near-Term Improvements to Water Supply and Distribution. Ongoing improvements are planned in 2003—2004 to the existing Disi well field to maintain existing capacity and improve the consistency of water supply. Well field improvements will include:

- New surge control valves and hardware at six reservoirs (two new and four existing), and two break tanks.
- Installation of a SCADA instrumentation system at the Disi and Yutum Wellfields and reservoirs to allow for remote monitoring and control of the wellfields, reservoirs, and transmission system.
- Flow and level metering equipment at the wells, reservoirs, and transmission system.
- Overall upgrade and rehabilitation of the individual wells, including improved security, new valves, gages, and electrical improvements.

Existing Wastewater Collection and Treatment. Currently, much of wastewater in the City of Aqaba is collected by gravity in six pumping stations and pumped from the City to treatment lagoons northwest of the City.

The northern areas of the City drain by gravity to the wastewater treatment plant. Wastewater on the South Coast is treated in underground septic systems, and percolates into the ground.

The gravity collection system includes approximately 185 kilometers of pipelines, ranging from 150 mm to 800 mm in diameter. The pipelines are a mixture of materials: ductile iron, several types of plastic pipe, and concrete.

The Aqaba system consists of 7 pumping stations as follows:

1. Al Hafayer Pumping Stations (3). These three pumping stations are located along the coastline and are sized at 70 liters-per-second. Each of these stations pumps to the Main Pumping Station. All are equipped with submersible pumps.
2. Royal Pumping Station. This pumping station, which is not operated by WAJ-Aqaba, pumps to the Main Pumping Station.
3. Pumping Station No. 2. This submersible pumping station is located in the port area and pumps to the Main Pumping Station.
4. The Main Pumping Station. This pumping station receives most of the wastewater collected in Aqaba. This pump station receives gravity flow from the surrounding area, and all pumped flow from the Al Hafayer Pumping Stations, the Royal Pumping Station, and Pumping Station No. 2. The pumping station is a wet pit-dry pit type of pumping station.

The existing wastewater treatment plant is a 9,000 cubic-meter-per-day facultative lagoon system, followed by two polishing ponds, and percolation and evaporation ponds. No mechanical aeration is provided. The plant is currently operating at capacity.

Near-Term Wastewater Collection and Treatment. A new 21,000 cubic-meter-per-day extended aeration wastewater treatment plant has begun construction and is expected to be complete in 2005. The plant is located adjacent to the existing wastewater treatment plant.

The new wastewater treatment plant has been funded by a grant from the U.S. Agency for International Development (USAID), and consists of the following facilities:

- Headworks (screening and grit removal)
- Chemical feed and mixing facilities
- Oxidation ditches with brush aerators
- Secondary clarifiers
- Return and waste activated sludge pumping systems
- Ultraviolet disinfection system
- Automatic backwash filters for effluent filtration
- Reclaimed and agricultural water pumping systems
- Sludge drying beds
- A new Operations Building
- Additional process buildings

The existing wastewater treatment ponds will be used for additional effluent polishing prior to effluent reuse.

The wastewater treatment project grant also includes the following work at the wastewater pumping stations:

- Al Hafayer Pumping Stations (3)—New pressure transmitters and SCADA system;
- Pump Station No. 2—New flow meter, level control system, some miscellaneous yard piping, and miscellaneous mechanical/electrical work;
- Main Pumping Station: Replacement of the four pumps, new wiring, piping and valves, a new flow meter, and miscellaneous mechanical, electrical and instrumentation work.

Several collection systems are under construction in residential areas, and approximately 60 kilometers of reclaimed water pipelines are currently being constructed.

Past Asset Valuation Work

A previous asset evaluation was prepared for WAJ-Aqaba by Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), the German aid agency. This is the only known asset register and evaluation document.

This work is compiled in a single document, Working Paper No. 131, issued in December 2000. No asset evaluation or registration has been performed since that time.

Table 1 is a summary of the asset valuation prepared by GTZ in Jordanian Dinars (JD).

Table 1: Summary of WAJ-Aqaba Assets in JD As of 11/30/00 (by GTZ)[1]

Assets Description	Estimated Cost	Depreciation Percentage	Accumulated Depreciation	Net Estimated Cost
Land	1,929,880.000	0%	0.000	1,929,880.000
Buildings	1,140,002.500	2.5% , 5%	428,893.311	711,109.189
Well	1,547,799.450	6.67% , 10%	965,170.913	582,628.537
Reservoir & Tanks	2,005,623.600	2.5% , 3.33%	815,867.527	1,189,756.073
Wastewater Treatment Plants	1,705,775.000	2.5%	597,021.250	1,108,753.750
Water Pipes	31,980,025.381	2.5% - 6.67%	15,900,816.864	16,079,208.517
Wastewater Pipes	9,598,152.200	3.33%	3,949,139.534	5,649,012.666
Electro Mechanical Equipment	2,390,201.422	2.5% - 10%	2,006,815.600	383,385.822
Valves	623,485.000	6.67%	455,709.757	167,775.244
Meters	38,300.000	6.67%	38,300.000	0.000
Vehicles	560,875.000	14.29%	378,785.900	182,089.100
Computer Hardware & Software	64,073.000	25%	64,073.000	0.000
Miscellaneous	139,534.000	10% ,12.5%	105,717.457	33,816.543
Total	**53,723,726.553**		**25,706,311.113**	**28,017,415.440**

[1] 1 JD = $1.43

All asset valuations contained in the table were calculated using historical costs, and straight-line depreciation using the assumed asset lives shown in the table. The complete document, with a listing of all assets evaluated, will be available to all prospective bidders.

This work and methodology have been accepted by the MWI, and shall serve as the starting point for the additional asset work to be performed under this Scope of Work.

Scope of Work and Deliverables

The results of the asset register and valuation will be submitted to both the Ministry of Water and Irrigation (MWI) and ASEZA for review and approval in conjunction with the establishment of AWC.

As part of his scope, the Contractor shall submit the following:

1. **Draft Valuation Methodology Report.** Within 3 weeks of Notice-To-Proceed and before proceeding with asset evaluation, the Contractor shall submit a Draft Valuation Methodology Report for the review and approval of MWI and ASEZA.

   This report shall be based upon a review of the methodology for valuing and depreciating assets used in GTZ's Working Paper No. 131, and upon Generally Accepted Accounting Principles as applied to water and wastewater utilities, Jordanian accounting practices and standards, and international best practices.

   Specifically, the report shall include:

   - An evaluation of the adequacy of the approach utilized by GTZ in valuing the WAJ-Aqaba assets;
   - An evaluation of the suitability of the depreciation factors and straight-line depreciation method used by GTZ in developing current (up to February 1, 2004) asset value and accumulated depreciation;
   - A description of the methods of asset valuation (historical cost, replacement cost, useful service life, among others) utilized as best practices by U.S. utilities;
   - A description of the method for valuing the assets from all USAID grant projects according to Jordanian accounting standards;
   - An evaluation of the ability of the Contractor to adapt the listing of accounts used in GTZ's Working Paper No. 131 to the National Association of Regulatory Utility Commissioners (NARUC) standard listing of utility accounts;
   - A listing of typical service lives of water and wastewater utility assets used in depreciation calculations, and proposed for this asset evaluation;

- The Contractor's proposal for the most practical and accurate method for updating the GTZ asset valuation to current valuation using best practices, or the reasons that the current asset valuation cannot be upgraded to best practices. In the latter case, the Contractor shall describe any negative financial impacts that not employing best practices will have on AWC.
- The Contractor's proposal for valuing ASEZA's assets (not covered by GTZ), if different, from the proposed method for valuing MWI's assets;
- The Contractor's proposal for best methods for asset valuation to be used going forward by AWC.
- The Contractor's detailed work plan and schedule for completing the asset registration and valuation work, using his proposed method.

The Contractor shall not undertake any asset valuation work until the Draft Report is approved, though he can begin collecting data for registration of assets.

2. **Final Valuation Methodology Report.** The Contractor shall incorporate the comments of MWI and ASEZA from the Draft Report and issue a Final Valuation Methodology Report. The Final Valuation Methodology Report shall serve as the basis for all asset valuation work performed by the Contractor.

   The Final Report shall be submitted within two weeks of receipt of comments from MWI and ASEZA.

3. **Documentation of WAJ-Aqaba Assets.** The Contractor shall visit WAJ-Aqaba and WAJ-Amman offices, and make any necessary field visits and measurements to obtain information on WAJ-Aqaba assets placed into service after November 30, 2000, including ongoing construction.

   Information gathered shall include a specific description of the asset (location, size, quantity, length, diameter, material, make, model number as appropriate), historical cost, general condition, and estimated remaining service life. Metric units shall be used.

   All WAJ-Aqaba assets placed into service prior to November 30, 2000 shall be considered to have been registered and accepted by both MWI and ASEZA as an accurate description of WAJ-Aqaba assets through November 30, 2000. (Note that the valuation of those assets may still be subject to modification, depending upon the approved methodology from the Final Asset Valuation Report).

   WAJ-Aqaba assets shall be tabulated separately from ASEZA assets. To the extent possible, the NARUC standard listing of accounts shall be used in developing the register of assets.

4. **Documentation of ASEZA Assets.** The Contractor shall visit ASEZA offices in Aqaba, and make any necessary field visits and measurements to obtain information on all ASEZA water and wastewater assets, regardless of their in-service date, including on-going construction.

   Information gathered shall include specific description of the asset (location, size, quantity, length, diameter, material, make, model number as appropriate), historical cost, general condition, and estimated remaining service life. Metric units shall be used.

   To the extent possible, the NARUC standard listing of accounts shall be used.

5. **Valuation of WAJ-Aqaba Assets.** The Contractor shall use the approved methodology from the Final Valuation Methodology Report to value the post-November 30, 2000 assets of WAJ-Aqaba.

   With regard to the valuation of pre-November 30, 2000 assets, the Contractor shall use the particular method approved for this class of assets.

6. **Valuation of ASEZA Assets.** The Contractor shall use the approved methodology from the Final Valuation Methodology Report to value all ASEZA assets.

7. **Draft Registration and Asset Valuation Report.** Within 90 days of submittal of the Final Valuation Methodology Report, the Contractor shall submit a Draft Registration and Asset Valuation Report to MWI and ASEZA for review and approval.

   The Draft Report shall contain separate registers of:

   - Pre-November 2000 assets
   - Post-2000 WAJ assets,
   - All ASEZA assets, and
   - A combined tabulation of accounts for both organizations.

   The assets should be listed in the NARUC standard listing of accounts. These registers shall also be provided separately on Excel™ spreadsheets.

   The asset registers shall also contain the individual valuation of each asset on the specified AWC Commencement Date, projected to be February 1, 2004, but to be provided specifically to the Contractor at a later date by MWI and ASEZA.

   In addition to the asset values at the Commencement Date, the report shall specify the method used for arriving at the asset value, and the formula for valuing each asset going forward.

8. **Final Registration and Asset Valuation Report.** The Contractor shall incorporate the comments of MWI and ASEZA from the Draft Report and issue a Final Registration and Asset Valuation Report.

   The Final Report shall be submitted within two weeks of receipt of comments from MWI and ASEZA.